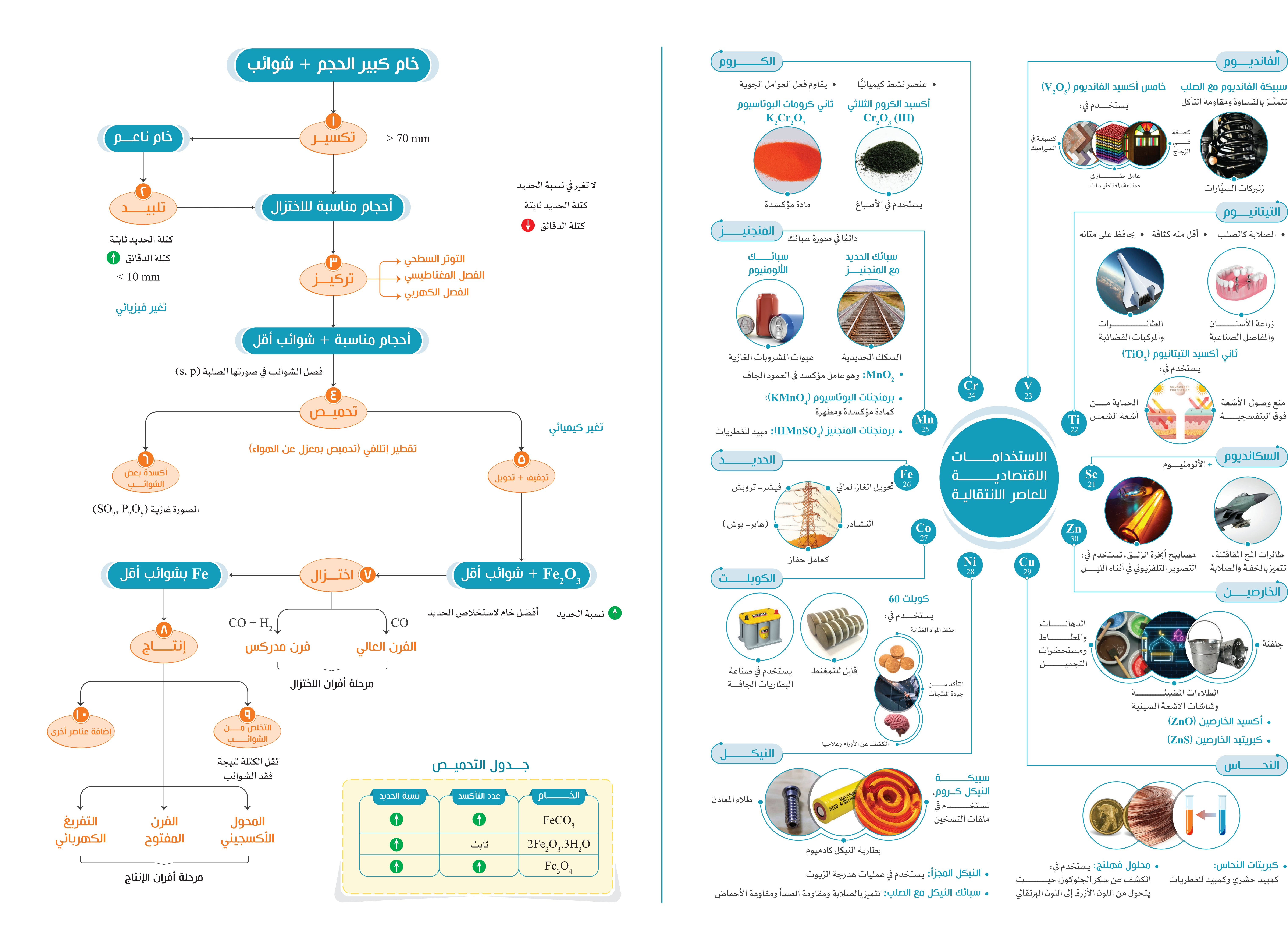
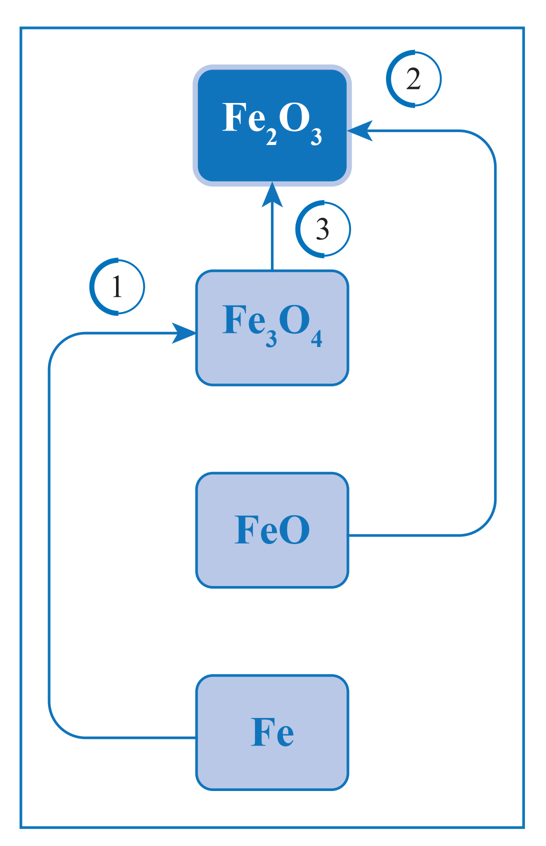
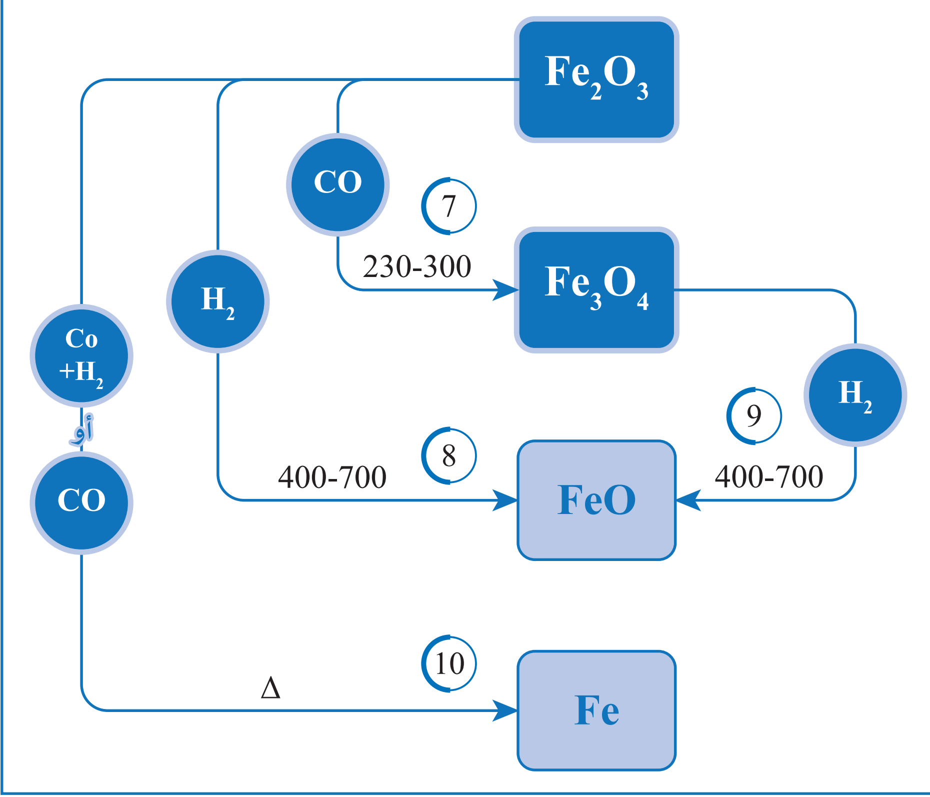
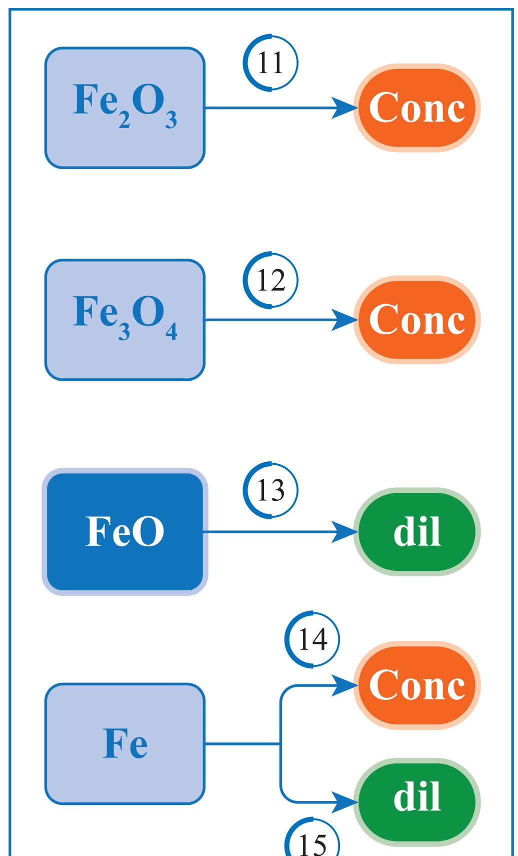
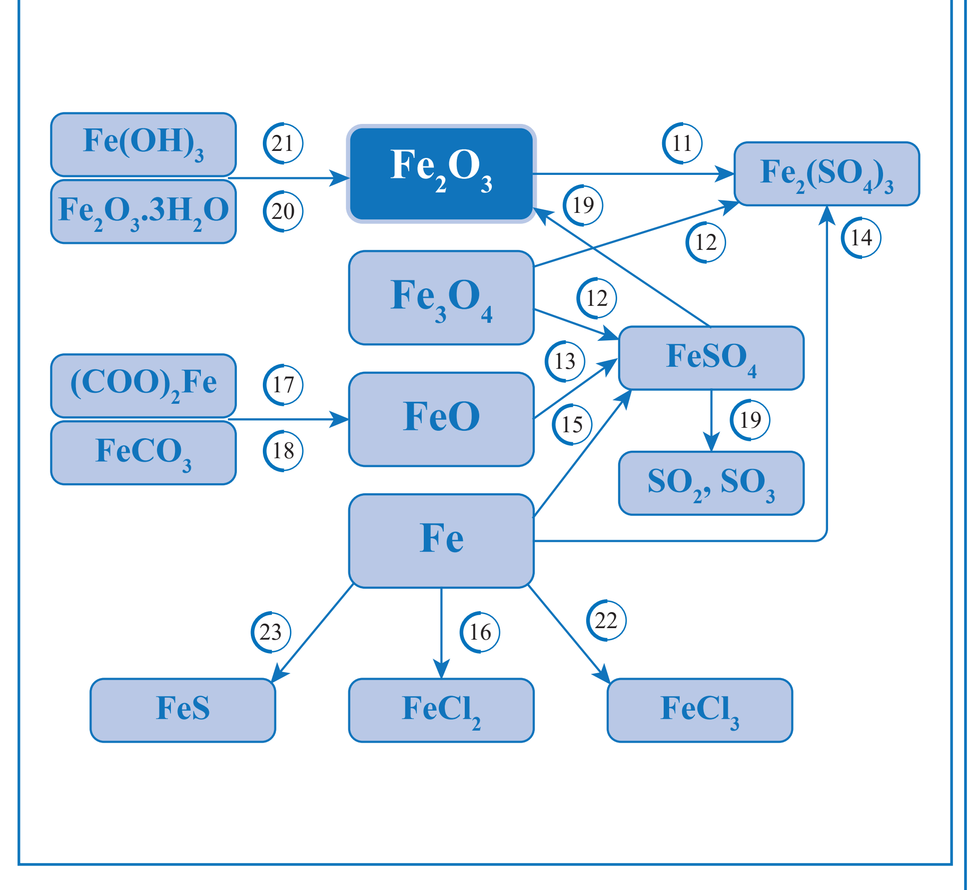


الخام	عدد التأكسد	نسبة الحديد
$FeCO_3$	↑	↑
$2Fe_2O_3.3H_2O$	ثابت	↑
Fe_3O_4	↑	↑









تفاعلات الأكسدة:

(1) $3Fe_{(s)} + 2O_{2(g)} \xrightarrow{\Delta} Fe_3O_{4(s)}$

(2) $2FeO_{(s)} + \frac{1}{2}O_{2(g)} \xrightarrow{\Delta} Fe_2O_{3(s)}$

(3) $2Fe_3O_{4(s)} + \frac{1}{2}O_{2(g)} \xrightarrow{\Delta} 3Fe_2O_{3(s)}$

(4) $3Fe_{(s)} + 2O_{2(g)} \xrightarrow{500\,°C} Fe_3O_{4(s)} + 4H_{2(g)}$

الأكسدة تتم بواسطة O_2:

(5) $S_{(s)} + O_{2(g)} \xrightarrow{\Delta} SO_{2(g)}$

(6) $4P_{(s)} + 5O_{2(g)} \xrightarrow{\Delta} 2P_2O_{5(g)}$

تفاعلات الاختزال:

(7) $3Fe_2O_{3(s)} + CO_{(g)} \xrightarrow{230-300\,°C} 2Fe_3O_4 + CO_{2(g)}$

(8) $Fe_2O_{3(S)} + H_{2(g)} \xrightarrow{400-700\,°C} 2FeO_{(s)} + H_2O_{(v)}$

(9) $Fe_3O_{4(S)} + H_{2(g)} \xrightarrow{400-700\,°C} 3FeO_{(s)} + H_2O_{(v)}$

(10) $3CO_{(g)} + Fe_2O_{3(s)} \xrightarrow{\Delta} 2Fe + 3CO_{2(g)}$

مع الأحماض:

(11) $Fe_2O_{3(s)} + 3H_2SO_{4(aq)} \xrightarrow{Conc./\Delta} Fe_2(SO_4)_{3(aq)} + 3H_2O_{(\ell)}$

(12) $Fe_3O_{4(s)} + 4H_2SO_{4(g)} \xrightarrow{Conc./\Delta} FeSO_{4(aq)} + Fe_2(SO)_{3(aq)} + 4H_2O_{(v)}$

(13) $FeO_{(s)} + H_2SO_{4(aq)} \xrightarrow{dil.} FeSO_{4(aq)} + H_2O_{(\ell)}$

(14) $3Fe_{(s)} + 8H_2SO_4 \xrightarrow{Conc./\Delta} FeSO_{4(aq)} + Fe_2(SO_4)_{3(aq)} + 4SO_{2(g)} + H_{2(g)}$

(15) $Fe_{(s)} + H_2SO_{4(aq)} \xrightarrow{dil.} FeSO_{4(aq)} + H_{2(g)}$

(16) $Fe_{(s)} + 2HCl_{(aq)} \xrightarrow{dil.} FeCl_{2(aq)} + H_{2(g)}$

تفاعلات الانحلال الحراري:

(17) $(COO)_2Fe_{(s)} \xrightarrow[\text{بمعزل عن الهواء}]{\Delta} FeO_{(s)} + CO_{(g)} + CO_{2(g)}$

(18) $FeCO_{3(s)} \xrightarrow{\Delta} FeO_{(s)} + CO_{2(g)}$

(19) $2FeSO_{4(aq)} \xrightarrow{\Delta} 4Fe_2O_{3(s)} + SO_{2(g)} + SO_{3(g)}$

(20) $2Fe_2O_3.3H_2O_{(s)} \xrightarrow{\Delta} 2Fe_2O_{3(s)} + 3H_2O_{(v)}$

(21) $2Fe(OH)_{3(s)} \xrightarrow{\text{More than } 200\,°C} Fe_2O_{3(s)} + 3H_2O_{(v)}$

مع اللافلزات:

(22) $2Fe_{(s)} + 3Cl_{2(g)} \xrightarrow{\Delta} 2FeCl_{3(s)}$

(23) $Fe_{(s)} + S_{(g)} \xrightarrow{\Delta} FeS_{(s)}$

تحضير العوامل المختزلة:

(24) $C_{(s)} + O_{2(g)} \xrightarrow{\Delta} CO_{2(g)}$

(25) $CO_{2(g)} + C_{(s)} \xrightarrow{\Delta} 2CO_{(g)}$

(26) $3CO_{(g)} + Fe_2O_{3(s)} \xrightarrow{\Delta} 2Fe + 3CO_{2(g)}$

(27) $2CH_{4(g)} + CO_{2(g)} + H_2O_{(v)} \xrightarrow{\Delta} 3CO_{(g)} + 5H_{2(g)}$

(28) $2Fe_2O_{s(s)} + 3CO_{(g)} + 3H_{2(g)} \xrightarrow{\Delta} 4Fe_{(s)} + 3CO_{2(g)} + 3H_2O_{(v)}$

(29) $FeCl_{3(s)} + 3NH_4OH \longrightarrow Fe(OH)_{3(s)} + 3NH_2Cl_{(aq)}$

(30) $2Fe(OH)_{3(s)} \xrightarrow{\text{More than } 200\,°C} Fe_2O_{3(s)} + 3H_2O_{(v)}$

(31) $FeSO_4 + NaOH \longrightarrow Fe(OH)_2 + Na_2SO_4$